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	Document ID	Kind Codes	Source	Issue Date	Pa
1	US 6222763 B1		USPAT	20010424	35
2	US 6026014 A		USPAT	20000215	35
3	US 5978262 A		USPAT	19991102	17

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(54) NONVOLATILE SEMICONDUCTOR MEMORY AND READ METHOD
4,158,888 4/1980 Og et al. 3,652,234
4,414,891 11/1980 Mathews et al. 3,652,234
4,675,426 9/1989 Butler et al. 3,652,234
4,782,479 12/1989 Tsubota et al. 3,652,234

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(52) U.S. Patent Documents
4,158,888 21,880 365/200

37 Claims, 28 Drawing Sheets

ABSTRACT

In a nonvolatile semiconductor memory in which multiple-value information is stored in one memory cell by setting a plurality of threshold values, data is successively read from word lines while continuously changing the word-line read level from a lowest level to a highest level, and the next bit line is successively precharged in accordance with the data stored in each memory for reading next data.

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